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PATENT APPLICATION
ATTORNEY DOCKET NO. 70970019-1

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PATENT & TRADEMARK OFFICE

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): S. Krishnaswamy

Serial No.: 09/049,676 Examiner: J. Cardone

Filing Date: March 27, 1998 Group Art Unit: 2152

Title: MULTI-PROTOCOL COMMUNICATION SUBSYSTEM CONTROLLER

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Washington, D.C. 20231

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith in triplicate is the Appeal Brief in this application with respect to the Notice of Appeal filed on **May 10, 2001**.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $310.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

( ) (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d) for the total number of months checked below:

( )	one month	$110.00
( )	two months	$390.00
( )	three months	$890.00
( )	four months	$1390.00

( ) The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 50-1078 the sum of **$310.00**. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 50-1078 pursuant to 37 CFR 1.25.

(X) A duplicate copy of this transmittal letter is enclosed.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231.

Date of Deposit: **July 10, 2001**

Typed Name: **Shelley White**

Signature: Shelley White

Respectfully submitted,

S. Krishnaswamy

By _____

Michael A. Papalas

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#11 Board 7/18/01

PATENT

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Inventor(s):	S. Krishnaswamy		
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ATTENTION: Board of Patent Appeals and Interferences

APPELLANT'S BRIEF (37 C.F.R. 1.192)

This brief is in furtherance of the Notice of Appeal, filed in this case on May 10, 2001.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

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This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. 1.192(c)):

I. Real Party Interest

II. Related Appeals and Interferences

III. Status of Claims

IV. Status of Amendments

V. Summary of Invention

VI. Issues

- A. First Issue
- B. Second Issue

VII. Grouping of Claims

VIII. Arguments

- A. First Issue
  - 1. Rejection under 35 U.S.C. 103(a)
  - 2. Conclusion

IX. Appendix of claims involved in the appeal

The final page of this brief bears the attorney's signature.

I. I. REAL PARTY IN INTEREST

The real party in interest in this appeal is:

Hewlett-Packard, a California corporation having its principal place of business in Palo Alto, California.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There is a total of 34 claims in the application, which are identified as claims 1-34.

B. Status of All the Claims

1. Claims canceled: None.
2. Claims withdrawn from consideration but not canceled: None.
3. Claims pending: Claims 1-34.
4. Claims allowed: None.
5. Claims rejected: Claims 1-34.
6. Claims objected to: None.

C. CLAIMS ON APPEAL

The claims on appeal are: Claims 1-34.

IV. STATUS OF AMENDMENTS

Appellant has filed a Response dated April 12, 2001, after the Final Office Action of February 12, 2001. No amendments to the claims were presented. Appellant presented arguments traversing of the final rejection of the claims in the Response. The Examiner responded to the arguments in the Advisory Action dated April 27, 2001, in which the Examiner stated the arguments have been considered, but do not place the application in condition for allowance.

V. SUMMARY OF INVENTION

The inventive system and method is associated with a communication subsystem of a computer which is provided with a communication subsystem controller (410 of FIGURE 4) to enable the computer to be connected to a communication network. The communication subsystem facilitates an application program (400) in the computer (402) to exchange information with other application programs (436, 404) in other computers (446, 408) connected to the communication network. See FIGURES 5 and 6, and page 16, line 7 to page 19, line 12 of the specification. A protocol stack in the communication subsystem is built from a series of protocol layers (414, 416, 418) and the communication subsystem controller. In the protocol stack, the communication subsystem controller forms an interface between the application program and protocol stack. The communication subsystem controller also forms an interface between each pair of adjacent protocol layers in the protocol stack. When information is transferred between the application program and the protocol stack, and between adjacent protocol layers in the protocol stack, it is done through the communication subsystem controller. See page 13, line 16 to page 16, line 6.

In a preferred embodiment of the invention, a set of predetermined protocol stack information is stored in a memory of the computer. In addition, a set of service access point information is stored in the memory. The set of service access point information is also stored in a persistent storage. A preselected stack of network-dependent protocol layers is also used to build the protocol stack. Information is then transferred between the preselected stack of network-dependent protocol layers and the series of protocol layers through an adapter layer and the communication subsystem controller. The communication subsystem controller also uses a persistent storage to store information for supporting recovery activities.

The communication subsystem controller therefore provides a well-defined interface between the adjacent protocol layers in the protocol stack and a well-defined interface between the application program and the protocol stack. By providing such well-defined interfaces, the communication subsystem controller also provides a means to develop and implement new or proprietary protocol layers cost effectively. See page 25, line 5 to page 26, line 5 and FIGURE 9. In addition, the communication subsystem controller also provides means for the quick-recovery of the communication subsystem. See page 24, line 6-20. Hence, the communication subsystem controller can be advantageously used in communication subsystems of client, server and gateway nodes.

VI. ISSUES

A. First Issue:

The first issue is whether claims 1-34 are unpatentable under 35 U.S.C. § 103(a) over Choquier et al., United States Patent Number 5,744,668, hereinafter Choquier, in view of Pearson, United States Patent Number 5,903,754, hereinafter Pearson.

VII. GROUPING OF CLAIMS

For purposes of this Appeal Brief only, the claims have been grouped as follows:

Group I Claims 1-34.

VIII. ARGUMENTS

A. First Issue

1. REJECTION UNDER 35 U.S.C. § 103(a)

Claims 1-34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Choquier in view of Pearson.

A Prima Facie Case of Obviousness Has Not Been Established

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art cited must teach or suggest all the claim limitations. See M.P.E.P. § 2143. Without conceding the second criteria, Appellant asserts that the rejection does not satisfy the first and third criteria.

The Office Action does not provide the requisite motivation.

The First Office Action dated August 29, 2000 admitted that Choquier does not teach building the protocol stack in such detail as using the plurality of protocol layers and the communication subsystem controller, wherein the communication subsystem controller forms interfaces between the application program and its adjacent protocol layer in the protocol stack and at least between a pair of adjacent protocol layers in the protocol stack for transferring messages. The First Office Action attempted to cure this deficiency by introducing Pearson, which the First Office Action alleges to teach having such elements. The motivation for making the combination was presented as follows:

> "It would have obvious ... to incorporate the detailed protocol stack, shown by Pearson, in to the gateway system, taught by Choquier in order to easily disclosed the relationship of the layers. One of ordinary skill in the art would have been motivated to modify Choquier to include the detailed protocol stack in view of Pearson, so that a user could replicate the stack easily."

In the Response dated November 17, 2000, Appellant stated that it is well settled that the fact that references can be combined or modified is not sufficient to establish a prima facie case of obviousness, M.P.E.P. § 2143.01. The layers of Choquier, and their relationships, are already disclosed, see FIGURE 5A of Choquier. Thus, the teaching of

Pearson is not needed for such disclosure. Furthermore, there is no need for the stack of Choquier to be replicated. Choquier does not describe any operations where replicating stacks is necessary. Thus, the teaching of Pearson is not needed for such replication. Moreover, Pearson does not describe how its protocol stack would allow for such replication. Thus, there is no teaching that Pearson would more easily allow replication. Therefore, the motivational language is merely a statement that the reference can be modified, and does not state any desirability for making the modification. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ.2d 1430 (Fed. Cir. 1990), as cited in M.P.E.P. § 2143.01. Thus, the motivation provided by the Examiner is improper, as the motivation must establish the desirability for making the modification. No valid suggestion has been made as to why a combination of and common knowledge is desirable. Therefore, the rejection of claims 1-34 should be withdrawn.

In response, the Examiner has stated in the Final Office Action of February 12, 2001 that the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. The Examiner then states that the invention of Pearson complements the invention of Choquier use [sic] of layers within a protocol stack within a computer. The invention of Pearson has a [sic] more insight to some of the layers to strengthen the teaching of Choquier. The Examiner then concludes by stating that the combination of Choquier and Pearson gives the user easier [sic] understand (replication) of the layers within a stack.

In the Response of April 12, 2001, Appellant stated that it is well settled that the fact that references can be combined or modified is not sufficient to establish a prima facie case of obviousness, M.P.E.P. § 2143.01. The language provided by the Examiner are merely statements that the references can be combined, and does not state any desirability for making the modification. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ.2d 1430 (Fed. Cir. 1990), as cited in M.P.E.P. § 2143.01. For example, the statements that Pearson complements the invention of Choquier is a statement that the references can be combined. Similarly, the statement that the

invention of Pearson provides more insight into the layers is also a statement that the references can be combined. The last statement, namely the combination of Choquier and Pearson gives the user easier [sic] understand (replication) of the layers within a stack, appears to be a conclusion that lacks supporting analysis and/or reasoning, as well as factual evidence from the references. Thus, the motivation and commentary provided by the Examiner is improper, as the motivation must establish the desirability for making the modification. Since no valid suggestion has been made as to why a combination of Choquier and Pearson is desirable, then the rejection of claims 1-34 should be withdrawn.

The recited combination does not teach or suggest all claimed limitations.

The First Office Action dated August 29, 2000 admitted that Choquier does not teach building the protocol stack in such detail as using the plurality of protocol layers and the communication subsystem controller, wherein the communication subsystem controller forms interfaces between the application program and its adjacent protocol layer in the protocol stack and at least between a pair of adjacent protocol layers in the protocol stack for transferring messages. The First Office Action attempts to cure this deficiency by introducing Pearson, which the First Office Action alleges to teach having such elements. However, this combination, as presented, does not teach or suggest all limitations of the claimed invention.

In the Response dated November 17, 2000, Appellant stated that Choquier does not disclose all of the limitations of the claims. The protocol stack of claims 1, 15, and 21 comprises the plurality of protocol layers and the interfaces of the communication subsystem controller. The sections of Choquier being relied upon in the First Office Action as teaching these elements are not in the same stack. For example, in rejecting the step of enabling the adjacent protocol layer ... of claim 1, the First Office Action cites the text of Choquier at column 12, line 6 to column 13, line 38. This section of Choquier discusses the MPC layer 502a, 502b of FIGURE 5A. In rejecting the step of enabling a first protocol layer in the pair of adjacent protocol layers ... of claim 1, the First Office Action cites the text of Choquier at column 13, lines 4-34 and column 18, lines 10-54. These sections of Choquier discuss layer 519 and program 520 of FIGURE 5A, and MCP layer 208a, and 208b of FIGURE 5A, respectively. As is apparent from the FIGURE, all of the recited layers are not in the same stack as required by claims 1, 15, and 21. For example, layer 502a and layer 208a are located

in the client 102, while layer 519 and layer 208b are located in the gateway 126. Thus, Choquier does not teach these claimed limitations and Pearson is not relied upon as teaching these claimed limitations. Therefore, Appellant respectfully asserts that for the above reasons claims 1, 15, and 21 are patentable over the 35 U.S.C. § 103(a) rejection of record. Claims 2-14, 16-20, and 22-34 depend directly from base claims 1,15, and 21 respectively, and thus inherit all limitations of their respective base claims. Each of claims 2-14, 16-20, and 22-34 set forth features and limitations not recited by the combination of Choquier and Pearson. Thus, Appellant respectfully asserts that for the above reasons claims 2-14, 16-20, and 22-34 are patentable over the 35 U.S.C. § 103(a) rejection of record.

In response, the Examiner has responded in the Final Office Action of February 12, 2001 that the claims must be given their broadest reasonable interpretation. The Examiner then states that Choquier discloses the limitations through the protocol stacks of the client and the server, and that the passages given [sic] to show the interaction of the layers within the client also had citations of the gateway involved with the transactions between the client and server. The Examiner concludes by stating that the client in the invention of Choquier was selected to read upon Applicant's claimed invention, given their broadest reasonable interpretation.

In the Response of April 12, 2001, Appellant stated that giving the claims their broadest reasonable interpretation does not allow for limitations to be ignored. Appellant respectfully reminds the Examiner that "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art," see M.P.E.P. § 2143.03, and that it is the claimed invention as a whole which must be considered when applying 35 U.S.C. § 103, see M.P.E.P. § 2141. The claims of the present invention require that the protocol stack comprises the plurality of protocol layers and the interfaces of the communication subsystem controller. The sections of Choquier being relied upon in the Office Action as teaching these elements are not in the same stack, in fact the elements are scattered between three different stacks located in computers, i.e. the client 102, the gateway 126, and the server 120. More specifically, the sections define elements 502a, 502b, 519, 520, 208a, and 208b, all of FIGURE 5A. If the Examiner is reading different elements of Choquier as teaching the limitations of the claimed invention, the Examiner must clearly explain his/her reading of the references. 'Whenever, on examination, any claim for a patent is rejected , or any objection . . . made', notification of the reasons for rejection and/or objection together with such

information and references as may be useful in judging the propriety of continuing the prosecution (35 U.S.C. 132) should be given," M.P.E.P. § 707. Furthermore, the Examiner must "clearly articulate[d] any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise respond completely at the earliest opportunity," M.P.E.P. § 706. As the rejection currently stands, Choquier does not teach these claimed limitations and Pearson is not relied upon as teaching these claimed limitations. Therefore, Appellant respectfully asserts that for the above reasons claims 1-34 patentable over the 35 U.S.C. § 103(a) rejection of record.

2. CONCLUSION

For the extensive reasons advanced above, Appellant respectfully contends that claims 1-34 are patentable. Therefore, reversal of the rejection is courteously solicited.

IX. APPENDIX OF CLAIMS

1. A method for transferring messages among an application program and a plurality of protocol layers in a communication subsystem of a computer using a communication subsystem controller, the computer being connected to a communication network and having a memory and at least one processor, the method comprising the steps of:

building a protocol stack using the plurality of protocol layers and the communication subsystem controller, wherein the communication subsystem controller forms interfaces between the application program and its adjacent protocol layer in the protocol stack and at least between a pair of adjacent protocol layers in the protocol stack for transferring messages;

enabling the adjacent protocol layer to the application program to be an application service provider in response to the application program;

enabling a first protocol layer in the pair of adjacent protocol layers in the protocol stack to be a protocol service provider in response to a second protocol layer in the pair of adjacent protocol layers in the protocol stack;

transferring messages between the application program and the application service provider, further including the steps of:

transferring messages between the application program and the communication subsystem controller, and

transferring messages between the communication subsystem controller and the application service provider; and

transferring messages between the second protocol layer and the protocol service provider, further including the steps of:

transferring messages between the second protocol layer and the communication subsystem controller, and

transferring messages between the communication subsystem controller and the protocol service provider.

2. The method as in Claim 1, wherein the step of building the protocol stack using the plurality of protocol layers and the communication subsystem controller further includes the step of building the protocol stack according to a set of predetermined protocol stack information stored in the memory, wherein the set of predetermined protocol stack information includes at least information of the adjacent protocol layer to the application program and the pair of adjacent protocol layers in the protocol stack.

3. The method as in Claim 1, wherein the step of building the protocol stack using the plurality of protocol layers and the communication subsystem controller further includes the step of storing a set of service access point information in the memory, wherein the set of service access point information includes at least information of service access points used by the adjacent protocol layer to the application program and the pair of adjacent protocol layers in the protocol stack for transferring messages.

4. The method as in Claim 3, wherein the step of storing the set of service access point information in the memory further includes storing the set of service access point information in a persistent storage for restoring the protocol stack during recovery activities.

5. The method as in Claim 3, wherein the step of transferring messages between the application program and the application service provider further includes the step of transferring messages between the application program and the application service provider using a service access point according to the set of service access point information stored in the memory.

6. The method as in Claim 3, wherein the step of transferring messages between the second protocol layer and the protocol service provider further includes the step of transferring messages between the second protocol later and the protocol service provider using a service access point according to the set of service access point information stored in the memory.

7. The method as in Claim 1, wherein the step of building the protocol stack using the plurality of protocol layers and the communication subsystem controller further includes the step of building the protocol stack using a preselected stack of network-dependent protocol layers, wherein the preselected stack of network-dependent protocol layers provide network-dependent services to the protocol stack for connecting the computer to the communication network.

8. The method as in Claim 7, wherein the step of building the protocol stack using the preselected stack of network-dependent protocol layers further includes the step of providing an adapter layer between the preselected stack of network-dependent protocol layers and its adjacent protocol later in the protocol stack for transferring messages between the preselected stack of network-dependent protocol layers and its adjacent protocol later in the protocol stack.

9. The method as in Claim 8, wherein the step of building the protocol stack using the preselected stack of network-dependent protocol layer further includes the step of building the protocol stack with the communication subsystem controller forming an interface between the adjacent protocol layer to the preselected stack of network-dependent protocol layers and the adapter layer for transferring messages.

10. The method as in Claim 9, further comprising the step of transferring messages between the preselected stack of network-dependent layers and its adjacent protocol layer, further including the steps of:

transferring messages between the adjacent protocol layer to the preselected stack of network-dependent protocol layers and the communication subsystem controller,

transferring messages between the communication subsystem controller and the adapter layer, and

transferring messages between the adapter layer and the preselected stack of network-dependent protocol layers.

11. The method as in Claim 1, further comprising the step of using multi-threading for enabling the computer to process messages in the protocol layers in the protocol stack.

12. The method as in Claim 1, wherein the step of transferring messages between the second protocol layer and the protocol service provider further includes the step of providing recovery information to the communication subsystem controller during the transfer of messages from one of the second protocol layer and the protocol service provider to the communication subsystem controller.

13. The method as in Claim 12, wherein the step of transferring messages between the application program and the application service provider further includes the step of providing recovery information to the communication subsystem controller during the transfer of messages from the application service provider to the communication subsystem controller.

14. The method as in Claim 13, further comprising the step of storing the recovery information in a persistent storage for resuming the transfer of messages during recovery activities.

15. A communication subsystem of a computer form providing connectivity to a communication network, the computer having an application program, a memory and at least one processor, wherein messages are transferred among the application program and a plurality of protocol layers in the communication subsystem using a communication subsystem controller, the communication subsystem using a communication subsystem controller, the communication subsystem comprising:

a protocol stack having:

the plurality of protocol layers, and

the communication subsystem controller, wherein the communication subsystem controller forms interfaces between the application program and its adjacent protocol layer in the protocol stack and at least between a pair of adjacent protocol layers of the protocol stack and between for transferring messages;

the adjacent protocol layer to the application program being enabled an application service provider in response to the application program; and

a first protocol layer in the pair of adjacent protocol layers in the protocol stack being enabled as a protocol service provider in response to a second protocol layer in the pair of adjacent protocol layers in the protocol stack.

16. The subsystem as in Claim 15, the memory further having a set of predetermined protocol stack information, wherein the set of predetermined protocol stack information includes at least information of the adjacent protocol layer to the application program and the pair of adjacent protocol layers in the protocol stack.

17. The subsystem as in Claim 16, the memory further having a set of service access point information, wherein the set of service access point information includes at least information of service access points used by the adjacent protocol layer to the application program and the pair of adjacent protocol layers in the protocol stack for transferring messages.

18. The subsystem as in Claim 15, further comprising a preselected stack of network-dependent protocol layers for providing network-dependent services to the protocol stack for connecting the computer to the communication network.

19. The subsystem as in Claim 18, further comprising an adapter layer between the preselected stack of network-dependent protocol layers and its adjacent protocol layer in the protocol stack, wherein the preselected stack of network-dependent protocol layers provide the network-dependent services to the protocol stack through the adapter layer for connecting the computer to the communication network.

20. The subsystem as in Claim 15, the computer further having a persistent storage for storing the set of service access point information and a set of recovery information to support recovery activities.

21. A program storage device readable by a computer, tangibly embodying a program of instructions executable by the computer to perform method steps for transferring messages among an application program and a plurality of protocol layers in a communication subsystem of a computer using a communication subsystem controller, the computer being connected to a communication network and having a memory and at least one processor, the method steps comprising:

building a protocol stack using the plurality of protocol layers and the communication subsystem controller, wherein the communication subsystem controller forms interfaces between the application program and its adjacent protocol layer in the protocol stack and at least between a pair of adjacent protocol layers in the protocol stack for transferring messages;

enabling the adjacent protocol layer to the application program to be an application service provider in response to the application program;

enabling a first protocol layer in the pair of adjacent protocol layers in the protocol stack to be a protocol service provider in response to a second protocol layer in the pair of adjacent protocol layers in the protocol stack;

transferring messages between the application program and the application service provider, further including the steps of:

transferring messages between the application program and the communication subsystem controller, and

transferring messages between the communication subsystem controller and the application service provider; and

transferring messages between the second protocol layer and the protocol service provider, further including the steps of:

transferring messages between the second protocol layer and the communication subsystem controller, and

transferring messages between the communication subsystem controller and the protocol service provider.

22. The program storage device as in Claim 21, wherein the step of building the protocol stack using the plurality of protocol layers and the communication subsystem controller further includes the step of building the protocol stack according to a set of predetermined protocol stack information stored in the memory, wherein the set of predetermined protocol stack

23. The program storage device as in Claim 21, wherein the step of building the protocol stack using the plurality of protocol layers and the communication subsystem controller further includes the step of storing a set of service access point information in the memory, wherein the set of service access point information includes at least information of service access points used by the adjacent protocol layer to the application program and the pair of adjacent protocol layers in the protocol stack for transferring messages.

24. The program storage device as in Claim 23, wherein the step of storing the set of service access point information in the memory further includes storing the set of service access point information in a persistent storage for restoring the protocol stack during recovery activities.

25. The program storage device as in Claim 23, wherein the step of transferring messages between the application program and the application service provider further includes the step of transferring messages between the application program and the application service provider using a service access point according to the set of service access point information stored in the memory.

26. The program storage device as in Claim 23, wherein the step of transferring messages between the second protocol layer and the protocol service provider further includes the step of transferring messages between the second protocol layer and the protocol service provider using a service access point according to the set of service access point information stored in the memory.

27. The program storage device as in Claim 21, wherein the step of building the protocol stack using the plurality of protocol layers and the communication subsystem controller further includes the step of building the protocol stack using a preselected stack of network-dependent protocol layers, wherein the preselected stack of network-dependent protocol layers provide network-dependent services to the protocol stack for connecting the computer to the communication network.

28. The program storage device as in Claim 27, wherein the step of building the protocol stack using the preselected stack of network-dependent protocol layers further includes the step of providing an adapter layer between the preselected series of network-dependent protocol layers and its adjacent protocol layer in the protocol stack for transferring messages between the preselected stack of network-dependent protocol layers and its adjacent protocol layer in the protocol stack.

29. The program storage device as in Claim 28, wherein the step of building the protocol stack using the preselected stack of network-dependent protocol layer further includes the step of building the protocol stack with the communication subsystem controller forming an interface between the adjacent protocol layer onto the preselected stack of network-dependent protocol layers and the adapter layer for transferring messages.

30. The program storage device as in Claim 29, the method steps further comprising the step of transferring messages between the preselected stack of network-dependent layers and its adjacent protocol layer, further including the steps of:

transferring messages between the adjacent protocol layer to the preselected stack of network-dependent protocol layers and the communication subsystem controller,

transferring messages between the communication subsystem controller and the adapter layer, and

transferring messages between the adapter layer and the preselected stack of network-dependent protocol layers.

31. The program storage device as in Claim 29, the method steps further comprising the step of using multi-threading for enabling the computer to process messages in the protocol layers in the protocol stack.

32. The program storage device as in Claim 21, where in the step of transferring messages between the second protocol layer and the protocol service provider further includes the step of providing recovery information to the communication subsystem controller during the transfer of messages from one of the second protocol layer and the protocol service provider to the communication subsystem controller.

33. The program storage device as in Claim 32, wherein the step of transferring messages between the application program and the application service provider further includes the step of providing recovery information to the communication subsystem controller during the transfer of messages from the application service provider to the communication subsystem controller.

34. The program storage devices as in Claim 33, the method steps further comprising the step of storing the recovery information in the persistent storage for resuming the transfer of messages during recovery activities.

Respectfully submitted,

By: _____

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Attorney/Agent for Applicant(s)
Reg. No. 40,381

Date: July 10, 2001

Telephone No. (214) 855-8186

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

Date of Deposit: July 10, 2001

Typed Name: Shelley White

Signature: Shelley White